THE SUMMARY REPORT OF THE JAPANESE SURVEY TEAM ON MAIZE PRODUCTION DEVELOPMENT PROJECT IN THAILAND

SEPTEMBER 17 ~ OCTOBER 2, 1976

JAPAN INTERNATIONAL COOPERATION AGENCY

C O N T E N T S

Preface

The Japan International Cooperation Agency dispatched the Survey Team for Maize Production Development in Thailand under the leadership of Mr. Motonaga Ohto from September 17 to October 2, 1976, to make a comprehensive study of the way in which cooperative project for maize production development in Thailand should be conducted.

After consultation primarily with the Agricultural Cooperatives Federation of Thailand (A.C.F.T.) and observing the present situation of agricultural cooperatives under the aegis of A.C.F.T., the Survey Team has submitted a report on the problems posed for the development of maize production in Thailand and also on the measures to cope with them.

I would be very happy if this paper, which is an excerpt from the above report, would prove to be useful for those who are concerned with the maize production development project.

My deepest appreciation is due to all those who have expended cooperation in making this survey both in Thailand and Japan.

Shinsaku Hogen
President,
Japan International Cooperation
Agency (JICA)

I Outline of Survey

1. Purpose of the Survey

A survey was conducted primarily on the present status of the project which is under way for cooperation between agricultural cooperatives in order to make a comprehensive study of the manner in which the project to develop maize production in Thailand should be carried out and also to clarify the future outlook.

2. Composition of the Survey Team

The member list of the Japanese Agricultural Survey Team on the Maize Development Program is as follows:

Name	Field	Position
Motonaga Ohto	Leader	Special advisor to JICA
Shohei Hirose	Maize production	Professor, Junior College of Agriculture, Nihon University
Yoshio Hironaka	Planning	Senior Technical Officer, International Cooperation Division, Ministry of Agriculture and Forestry (M.A.F.)
Hisao Watanabe	Soil	National Institute of Agricultural Sciences, M.A.F.
Yukihiko Yoshihara	Cooperative	National Federation of Agricultural Cooperative Associations

Name	Field	Position
Masahiko Tsutsumi	Economy	Assistant Head, Planning Division of Agriculture and Forestry, JICA
Hideo Naruse	Coordination	Assistant Head, Financial Division for Agriculture, JICA

Organized by Japan International Cooperation Agency

3. Itinerary of the Survey

Date	Place Visited	Content
Sept.17 1976	Tokyo--Bangkok	
Sept.18		Discussions and exchange of views with the Members of Survey Team for Technical Cooperation in the Development of Maize Production in Thailand. (Mr. Takeda, JICA Bangkok Office)
Sept.19		Meeting in the Survey Team
	Japanese Embassy	Preliminary Talk on the scope of work and schedule of the survey.

Date	Place Visited	Content
Sept.20		(Councilor Mr. Nonoyama, First Secretary Mr. Imafuji, Mr. Takeda
	Department of Cooperative Promotion (DCP)	Courtesy Call on the Director General and Briefing on the scope of work of the survey
		(Director-general Mr. Surin Cholpraserd and other officials)
Sept.21	ACFT	Briefed on ACFT's activities and the progress of its maize project.
		(ACFT President and others)
	*BAAC	Briefed on the outline of business of BAAC and the present status of agricultural financing.
Sept.22	Bangkok → Phitsanuloke and Petchaboon Agri. Co-ops.	Briefing on the agricultural co-ops' activities and visit to their facilities, accompanied by an ACFT Division Director concerned and Mr. Hashimoto of the National Federation of Agricultural Cooperative Associations

* BAAC: Bank of Agriculture and Agricultural Cooperatives

Date	Place Visited	Content
Sept.23	Nongtom Agri. Co-op.	Briefing on the agricultural co-op's activities and field survey on the management of agriculture.
Sept.24	Prompiram Agri. Co-op.	Ditto
Sept.25	Phitsanuloke → Chiang Mai	
Sept.26		Adjustment of collected data
Sept.27	Chiang Mai → Phrae, Muang Song Agri. Co-op.	Briefing on the agricultural co-op's activities and survey on the management of agriculture.
Sept.28	Phrae → Bangkok	
Sept.29	Bangkhen	Visit to the Department of Agriculture's Experimental Station.
	ACFT	Reporting on the findings of the survey.
	Unicoop. Japan	Briefing on the marketing of agricultural products.
Sept.30	Pakchong	Visit to the Corn and Sorgh m Research Center of the Department.

Date	Place Visited	Content
Oct.1		Adjustment of collected data
Oct.2	Bangkok → Tokyo	

4. Summary of the Survey Findings

In order to step up the production of maize in Thailand in the future, there is a need to concentrate efforts on the upgrading of productivity in already developed areas. There remains much room for this improvement. For the realization of technical improvements, solutions may be found by accumulating on-the-spot adaptability tests and comprehensive studies. The widespread extension of these techniques to farmers will pave the way for solutions in terms of production technology. In order to implement the widespread extension of improved production techniques, it is important to furnish peasants with management funds for the cultivation of maize. In order to make the supplying of funds possible, it is necessary to replenish the agricultural cooperative's activities as well as to improve and replenish the loan system of banking institutions and the method of its management.

If improvements are done one by one in the two sectors of technology and funds, it is believed that great expectations may be harbored on the increased maize productivity in Thailand, thus paving the way for the establishment of major maize production centers and assuring the position of maize as a major export product.

II Present Status of the Maize Development and Problems Posed

1. Background of the Cooperative Projects for Maize Development

Japan's past major cooperation in the development of maize production in Thailand are outlined below:

(1) Japan-Thailand Maize Trade Agreement

A maize trade agreement was concluded between those dealing with maize in Japan and Thailand in 1959 to stabilize the quality and the quantity dealt with. While the quality and other items have been revised year by year, this agreement is still in force. This agreement has greatly on the production of maize in Thailand.

(2) Project to Promote Exportation of Primary Products

In order to promote exportation of primary products from Thailand, the Japanese Government in 1965 granted subsidies for the projects carried out by Japanese business associations for the production of maize and the establishment of grain drying facilities in Thailand and enhanced measures for the production of maize.

(3) Cooperation between Japanese and Thai Agricultural Cooperatives

Agricultural cooperatives in Japan and Thailand have been carrying out cooperative activities primarily in the maize trade since 1962. The Joint Committee for Promotion of Trade Between Japanese and Thai Cooperatives was established in 1965, and a wide variety of collaborative work has been

performed between Japanese and Thai agricultural cooperatives primarily on the basis of maize. Attention is drawn to the project that has been carried out since 1975 to extend loans to the specified agricultural cooperatives engaged directly in the production of maize.

(4) Thai Government's Request for Cooperation from Japan

In order to improve the balance of trade, the Government of Thailand requested the Japanese Government in 1968 for increases in the purchase by the Japanese side of primary agricultural products and also for technical cooperation for these increases. In response to this request, the Japanese side carried out technical cooperation. In respect of maize, one of seven upland crops for which the Thai Government had made a request, no concrete cooperative projects were implemented due to the various circumstances in which both countries were placed.

(5) New Request and Implementation of Technical Cooperation Project

The Thai Government was concerned about the fact that the productivity of maize was on the downturn due to a drop in yield per acre, an increase in damage by blight and noxious insects and a delay in the development of cargo collecting system, although maize exports were on the upturn. In 1970, the Thai Government approached the Japanese Government on technical cooperation in solving these issues. In response to this request, the Japanese side carried out surveys and discussions, with the consequence that a governmental cooperative project was initiated in accordance with the Record of Discussions for the Technical Cooperation Project on Maize Development in Thailand on September 17, 1976;

2. Present Status of Cooperative Project for Development

As stated in relation to the past developments in 1. above, measures for the development of maize in Thailand have been taken for the cooperation of both governmental and nongovernmental sectors in Japan and Thailand since the 1950's. Japan's cooperative projects which are under way at present include a project for technical cooperation on a governmental basis and the maize agreement and a project for cooperation between Japanese and Thai agricultural cooperatives on a nongovernmental basis.

Of these the maize agreement which is a part of cooperation on a nongovernmental basis is designed to reach agreement each year on what Japan is to import and Thailand is to export. It is evident that this

agreement is exceedingly instrumental in systematically conducting the production of maize in Thailand for a given year and stimulating the production.

In the cooperative project between Japanese and Thai agricultural cooperatives, cooperation was extended in the early years in regard to the volume of dealings concerned directly with the trade of maize, the cargo collecting measures for these transactions, and the upgrading of agricultural cooperatives. This cooperative project has been steadily developed, and it is now replenished both in qualitative and quantitative terms as it encompasses not only the trade of maize but joint undertakings for pesticide production and financial support to model agricultural cooperatives as well. Particularly in terms of quality, it is significant that funds of the Japanese Government have been incorporated in the extension of funds to model agricultural cooperatives. Plans are afoot to provide technical guidance to agricultural cooperatives, to which the extension is applicable, under the project for technical cooperation which was initiated on a governmental basis in September 1976.

3. Problems Posed for Development Cooperation and their Countermeasures

A macroscopical review of the past developments concerned with the production of maize in Thailand reveals that the total output had increased by about 72 times, the planted area by about 30 times, and the yield per hectare by about 24 times from 1951 to 1975. By year, the rise in total output was 1.39 times in the 1950's, 1.15 times in the 1960's and 1.15 times on the average of the first four years in the 1970's, suggesting that the growth has been at a slow pace, granted that

a great impact was produced by a drought in 1972. In terms of planted area, the increase was 1.23 times in the 1950's, 1.13 times in the 1960's and 1.04 times in the 1970's, indicating that there appeared signs of a level-off or a drop from the latter half of the 1960's and the 1970's. The yield per hectare steadily increased from 1.09 tons in the 1950's to 2.16 tons in the latter half of the 1960's. With the advent of the 1970's, the yield dropped to 2.04 times, showing a downward trend.

One of the indices concerned with the production of maize in Thailand is that the production of maize does not seem to be placed on a stabilized basis but rather appears to fall into stagnation. In respect of planted area, newly cultivable areas in the corn belt have reached the limit and it seems that they are unlikely to increase with ease. Concerning the output, the increase in planted area has become less and the yield per hectare does not increase in inverse proportion to the lower increase in planted area. Why does the yield per hectare not increase? In general, the drop in fertility due to continuous cropping without fertilizer and the increase in the damage caused by blight and noxious insects may be cited.

Given these questions in regard to a raise in output, any attempts to find a solution by further expanding newly cultivable areas would be greatly tied in with measures for infrastructure, such as a traffic network, and for the environmental conservation, such as that of the land, so much so that it would be extremely difficult to solve them in a short time. For a short-term solution, it is necessary to study measures for a raise in yield per hectare -- or in

other words, to work for the solution of technical questions associated with cultivation with a view to raising the productivity of the existing cultivation area. When technical questions and their countermeasures are assessed from this point of view, the following matters can be deduced from the findings of the latest on-the-spot survey carried out on major cultivation areas under the supervision of the Petchaboon, Nongtom and Prompiram agricultural cooperatives.

(1) Irregularity of Rainfall and Irrigation Countermeasures

One of the problems which face the three agricultural cooperatives at present is the lack of water caused by an irregular rainfall in the early stage of the growth of maize. Any attempts for irrigation would be tied in with the cost-benefit-analysis, and it will be necessary to establish techniques to assure a higher yield by means of intensification, such as by fertilization. If it becomes possible to assure irrigation throughout the year, the existing planting pattern will as a matter of course be subject to change. The major question is how the present position of maize will change under these conditions and how the cultivation of maize will be improved in the change. Many experiences tell us that any technique designed exclusively for the cultivation of maize without whole cropping system will not be accepted by farmers. It is necessary to study how the improvements may be realized in the yearly pattern of plantation.

(2) Damage by Blight and Noxious Insects and Countermeasures

The drop in yield caused by blight and noxious insects is not so conspicuous in the days immediately following the outbreak of the damage. But the damage increases year by year and will all of a sudden turn out to be a serious one after the elapse of a certain period of time. The blight and insect damage which will become the major problem for the cultivation of maize in Thailand in the future is downy mildew. The best countermeasure available at present will be to cultivate species resistant to downy mildew. Fortunately, species resistant to downy mildew, such as Suwan No. 1, have been developed by the Thais, and an attempt is being made to produce and propagate them as an extension seed. Their further extension is naturally required, to be sure, but the simultaneous edition of ecological controls, such as early sowing and the shift to other crops, depending on the season, will replenish the measures against downy mildew. In relation to these issues, it is necessary to assure appropriate measures for changes in cultivating conditions, such as the mechanization of agricultural machinery and the adjustment of sowing machinery for irrigation. Then there are other types of blight and insect damage which are not predictable at present, and there is a need to pay heed to their possibility.

(3) Promotion and Maintenance of Quality Seeds and Further Measures

The maintenance and extension of quality seeds are an exceedingly important factor for a future expansion of the production. One of the problems

associated with the production of quality seeds is to upgrade the quality of seeds and maintenance a certain level of quality. As a measure, it is necessary to drive home techniques for the adjustment and preservation of seeds. If it becomes possible to cultivate maize as a secondary crop for paddy fields, the cultivation of maize as a secondary crop will presumably offer an effective seed production place in the light of the relations with techniques for the preservation of seeds. The attempt to find technical solutions from this kind point of view will become an important measure for the maintenance of quality seeds.

(4) Deterioration of Soil and Measures

The existing major maize production belt (Marginal Plain) generally feature good physical and chemical soil properties, and there exist many fertile places. It might be argued that this soil superiority has sustained the cultivation without fertilization in the past. The future propagation of irrigation will rapidly bring about changes in soil texture. The long-term continuation of irrigation may make the soil texture loam for less fertile sandy soil, and rises in the water retaining power and the base exchanging capacity is expected to upgrade the soil texture. For clayey soil, the layer under the furrow slice may be hardened and easily become impermeable, so that there is a need to prevent the surface soil from becoming bare. However, as new species of maize is widely introduced, the continuation of cultivation without fertilization will pose problems, depending on the fertilizer response, whether the cultivation is

done on the sandy or clayey soil even when the multi-measures are carried out with green manure and organic matter. For this reason, there is a need to clarify fertilizing techniques from an economic point of view.

(5) Fertilization and Countermeasures

Under the present circumstances, farm households and agricultural cooperatives in the survey area are unable to conclude whether the cultivation will be payable with a yield increase by means of fertilization. As stated in (4), above, it would be practically impossible to raise the productivity without fertilization. If that is the case, it will be urgently necessary to assess fertilization effects; increases in yield and particularly economic effects.

In the foregoing, major technical factors and the measures to cope with them have been introduced. As on-the-spot adaptability tests and their comprehensive studies are to be performed in a technical cooperation project on a governmental basis and also are performed in the projects of local agricultural cooperatives. The accumulation of these experiences will undoubtedly make it possible to work out appropriate solutions. If these techniques are disseminated as far as to become those of cultivating farmers, it is certain that the position of maize as a promising farm product in extensive areas suitable for the cultivation in Thailand will be established.

(6) Farmers' Participation in the Development Projects

Even if technical questions were all solved, it would naturally be impossible to raise the production without encouraging farmers for cultivation who are directly engaged in the production. This question may be boiled down to the extent to which the farm households' economy can be enriched by the cultivation of maize. Maize is a globel trade item, so that it is inevitably influenced by its international trading prices. In view of this fact, a drop in production cost with the upgrading of production technology and a drop in selling charges with the redevelopment of the marketing system will inevitably become one of the measures to cope with this question. In other words, the upbringing of farmers capable of managing farm work with a possible drop in production cost and the upbringing of organizations capable of reducing the selling charges will be an important measure. For this purpose, there is a need for peasants to have access to funds for their management so that they may be able to adopt techniques for improvements, and financial measures to assure the accomplishment of this purpose are required. These questions depend largely on a replenishment of the activities of agricultural cooperatives, which are organizations for peasants, and financial support could be extended by BAAC. These questions are also largely dependent on its loan system and the improvement and replenishment of this system.